

REPORT DOCUMENTATION PAGE**Form Approved**
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Service, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**1. REPORT DATE (DD-MM-YYYY)**

11-04-2013

2. REPORT TYPE

Master of Military Studies Research Paper

3. DATES COVERED (From - To)

September 2012 - April 2013

4. TITLE AND SUBTITLE

INVISIBLE BLEEDING: THE COMMAND TEAM'S ROLE IN THE IDENTIFICATION, UNDERSTANDING, AND TREATMENT OF TRAUMATIC BRAIN INJURY AND POST TRAUMATIC STRESS DISORDER

5a. CONTRACT NUMBER

N/A

5b. GRANT NUMBER

N/A

5c. PROGRAM ELEMENT NUMBER

N/A

6. AUTHOR(S)

Major Douglas R. Cullins, USMC

5d. PROJECT NUMBER

N/A

5e. TASK NUMBER

N/A

5f. WORK UNIT NUMBER

N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)USMC Command and Staff College
Marine Corps University
2076 South Street
Quantico, VA 22134-5068**8. PERFORMING ORGANIZATION
REPORT NUMBER**

N/A

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

N/A

10. SPONSOR/MONITOR'S ACRONYM(S)

N/A

**11. SPONSORING/MONITORING
AGENCY REPORT NUMBER**

N/A

12. DISTRIBUTION AVAILABILITY STATEMENT

Unlimited

13. SUPPLEMENTARY NOTES

N/A

14. ABSTRACT

The Marine Corps has ignored a leadership imperative of taking care of wounded warriors with undiagnosed and untreated Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD). Command teams must leverage the existing programs and infrastructure while demonstrating a thorough knowledge and understanding of these injuries, and their respective treatments, along with meaningful command action in order to improve resiliency. TBI and PTSD are the "invisible" wounds that, along with amputations, have become the signature wounds of Operation Iraqi Freedom and Operation Enduring Freedom. TBI and PTSD are insidious injuries that continue to haunt wounded warriors and units throughout the Marine Corps. TBI and PTSD present significant challenges to the wounded warrior, the medical community, the command team and the unit. Despite advances in medical research and treatment, patient throughout and the duration of intensive care continue to pose challenges to the Marine Corps. Additionally, Marine Corps command teams struggle with the issues surrounding these devastating injuries.

15. SUBJECT TERMS

Traumatic Brain Injury, Post Traumatic Stress Disorder, TBI, PTSD, Wounded Warrior, Leadership, Command, Casualties, OIF, OEF

16. SECURITY CLASSIFICATION OF:**a. REPORT**
Unclass**b. ABSTRACT**
Unclass**c. THIS PAGE**
Unclass**17. LIMITATION OF
ABSTRACT**
UU**18. NUMBER
OF PAGES**
48**19a. NAME OF RESPONSIBLE PERSON**

Marine Corps University / Command and Staff College

19b. TELEPHONE NUMBER (Include area code)

(703) 784-3330 (Admin Office)

United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068

MASTER OF MILITARY STUDIES

TITLE:

***INVISIBLE BLEEDING: THE COMMAND TEAM'S ROLE IN THE UNDERSTANDING,
IDENTIFICATION, AND TREATMENT OF TRAUMATIC BRAIN INJURY AND POST
TRAUMATIC STRESS DISORDER***

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

AUTHOR:

MAJOR DOUGLAS R. CULLINS, USMC

AY 12-13

Mentor and Oral Defense Committee Member: Rebecca Johnson

Approved: [Signature]

Date: 17 April 2013

Oral Defense Committee Member: Benjamin Jensen

Approved: [Signature]

Date: 17 April 2013

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

QUOTATION FROM, ABSTRACTION FROM, OR REPRODUCTION OF ALL OR ANY PART OF THIS DOCUMENT IS PERMITTED PROVIDED PROPER ACKNOWLEDGMENT IS MADE.

List of Tables

	Page
Table 1. DoD TBI Definition.....	6
Table 2. Symptoms of PTSD and TBI.....	10
Table 3. NICOE Primary Referral Patterns,,... ..	14
Table 4. PTSD Rates by year for OIF.....	16

Table of Contents

DISCLAIMER	iii
LIST OF TABLES	iv
EXECUTIVE SUMMARY	vii
PREFACE	ix
ACKNOWLEDGMENTS	x
INTRODUCTION	1
KNOWLEDGE	2
UNDERSTANDING	12
ACTION	21
CONCLUSION.....	24
APPENDIX A.....	25
APPENDIX B	26
APPENDIX C	27
APPENDIX D.....	28
APPENDIX E	29
APPENDIX F.....	31
APPENDIX G	33
REFERENCES	34

Executive Summary

Title: INVISIBLE BLEEDING: THE COMMAND TEAM'S ROLE IN THE IDENTIFICATION, UNDERSTANDING, AND TREATMENT OF TRAUMATIC BRAIN INJURY AND POST TRAUMATIC STRESS DISORDER

Author: Major Douglas R. Cullins, USMC

Thesis: The Marine Corps has ignored a leadership imperative of taking care of wounded warriors with undiagnosed and untreated Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD). Command teams must leverage the existing programs and infrastructure while demonstrating a thorough knowledge and understanding of these injuries, and their respective treatments, followed by immediate and meaningful command action, in order to improve resiliency and combat readiness.

Discussion: TBI and PTSD are the “invisible” wounds that, along with amputations, have become the signature wounds of Operation Iraqi Freedom and Operation Enduring Freedom. TBI and PTSD are insidious injuries that continue to haunt wounded warriors and units throughout the Marine Corps. Despite concerted efforts by the Marine Corps to promote TBI and PTSD awareness, the rate of these injuries continues to reach epidemic proportions. TBI and PTSD present significant challenges to the wounded warrior, the medical community, the command team and the unit. Despite advances in medical research and treatment, patient throughput and the duration of intensive care continue to pose challenges to the Marine Corps. Additionally, Marine Corps command teams struggle with the issues surrounding these devastating injuries. Primary among these issues is the identification and subsequent treatment of wounded warriors. Symptoms of undiagnosed and untreated TBI and PTSD such as suicide rates and substance abuse rates have continued to rise in the last decade, with no indication of subsiding. These serious problems are often symptoms of TBI and PTSD, whether diagnosed or not. Command teams represent the vital leadership link that can close the gap between those wounded warriors who have been identified and are being treated and the many who continue to quietly suffer while they serve. The identification and treatment of TBI and PTSD is not a purely medical function, but rather a combination of leadership at all levels working in concert with the supporting establishments. Mission accomplishment and troop welfare remain a command team's responsibility.

Conclusion: Rates of TBI and PTSD indicate that these wounds will continue to rise even as combat operations overseas begin to slow. Command teams that demonstrate knowledge, understanding and trust will be more effective in treating their wounded warriors and will improve their unit's overall esprit de corps and mission effectiveness. This thesis seeks to provide command teams with the structure and scale of the problem, and to propose solutions that will reduce the rates of undiagnosed TBI and PTSD, while potentially lowering suicide and substance abuse rates.

Preface

Three combat tours in support of Operation Iraqi Freedom and my subsequent struggle with Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD) have given me the unique insight to tackle the previously little discussed topics of TBI and PTSD as they relate to Marine Corps leadership and the moral imperative of caring for our wounded Marines and Sailors. My personal involvement with numerous Marines and their similar stories has only served to make it more clear that the Marine Corps can not expect advances in Navy Medicine to solve the problems associated with TBI and PTSD. The shocking rise in suicides, substance abuse rates, and behavioral problems only provide a measure of symptoms of a larger problem. Marines are quietly suffering with unaddressed TBI and/or PTSD due to a number of factors, the most important of which is a lack of understanding from their small-unit leaders all the way up to senior officers. The Marine Corps has made great strides in wounded warrior care, most notably the standing up of the Wounded Warrior Regiment and the OSCAR program. Navy Medicine has made similar advances in the science and understanding of TBI and its associated mental health issues, most notably PTSD. These proactive measures are noteworthy, but insufficient.

The care of our wounded warriors is fundamentally a leadership issue, one that requires knowledge, understanding, and action. TBI and PTSD is not an injury to be suffered alone; its collateral damage affects the entire unit and the Marine Corps' combat readiness. Leaders at all levels must be equipped with the knowledge in order to face this crisis head on. I believe current statistics and my personal accounts indicate that we have only seen the tip of the iceberg. The rates of TBI and PTSD will continue to rise as the current wars wind down, leaving us with an overwhelmed medical system and ill-prepared operational units.

Acknowledgments

This completion of this paper would not have been possible without the support of many people. If there are any errors in this work, they belong solely to me, as I was given more support than I could ever ask for. First and foremost, my wife, Sandy, her unwavering devotion to our family and support throughout my ongoing recovery was crucial during this arduous writing process. I am heartily thankful to my mentor in this work, Dr. Rebecca Johnson. Without her detailed feedback and endless patience, this work would have never reached conclusion. There are many leaders and health care providers that have helped me throughout the years of recovery, most notable, Captain Robert Koffman, M.D. USN. He has devoted his life to serving wounded warriors and will always have a special place amongst Marines. Finally, this work is for the many Marines and Sailors who continue to suffer from TBI and PTSD- never stop fighting.

To someone who has never experienced danger, the idea is attractive rather than alarming. You charge the enemy, ignoring bullets and casualties, in a surge of excitement. Blindly you hurl yourself towards icy death, not knowing whether you or anyone else will escape him... Here cannonballs and bursting shells are frequent, and life begins to seem more serious than the young man had imagined. Suddenly, someone you know is wounded; then a shell falls among the staff. You notice that some of the officers act a little oddly; you yourself are not as steady and collected as you were: even the bravest can become slightly distracted...the infantry endures the hammering for hours with incredible steadfastness. The air is filled with hissing bullets that sound like a sharp crack if they pass close to one's head. For a final shock, the sight of young men being killed and mutilated moves our pounding hearts to awe and pity.¹

*-Carl Von Clausewitz
On War*

Carl Von Clausewitz was no stranger to the horrors of war. 200 years later, combat remains unchanged. Its terror, violence, and tragic consequences forever impact those who survive it. Every war has its “signature wounds;” Vietnam had Agent Orange, Desert Storm had Gulf War Syndrome, and Operations Iraqi Freedom and Enduring Freedom have Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder (PTSD). Of course, any student of military history will tell you that the nature of war remains unchanged. Veterans of the Prussian War that Clausewitz studied and wrote about undoubtedly suffered from the same wounds warriors do today, the same terrible “hidden” traumas. They merely addressed it as something else, calling it shell shock or battle fatigue. What has changed is our society, and with it, our understanding of medicine and the effects of battle on the human body and psyche.

The Marine Corps has ignored a leadership imperative of taking care of wounded warriors with undiagnosed and untreated TBI and PTSD. Command teams must leverage the existing programs and infrastructure while demonstrating a thorough knowledge and understanding of these injuries, and their respective treatments, along with fostering an

environment of trust with the wounded warrior, in order to improve resiliency and combat readiness. The author seeks to provide a useful framework for command teams to assist in the identification and treatment of these wounds, which have become endemic in units throughout the Corps. The proposed framework consists of the 3 pillars for the effective leadership of Marines with TBI and/or PTSD. The pillars are as follows: Knowledge, Understanding, and Action. This framework loosely follows the cognitive process in which people make important decisions; first gathering information and assimilating it into knowledge, followed by a contextual understanding of what they have learned, and ultimately leading to a decisive and informed action. When coupled with an understanding of how to leverage the existing wounded warrior care infrastructure, the framework will prove useful in fulfilling a commander's two primary responsibilities: mission accomplishment and troop welfare. This work is divided sections that reflect the proposed framework, along with a conclusion that recommends further improvements to the existing wounded warrior care system; which will undoubtedly aid command teams in the future. It is the author's hope that this framework will serve command teams well in their mission of leading and caring for the country's young Marines. It is a matter of life and death for the wounded Marine and his family, and one of combat readiness, resiliency, and loyalty for the Marine Corps.

Knowledge

Traumatic Brain Injury

Knowledge represents the first pillar in the proposed framework and provides the baseline from which understanding and action must stem from. Knowledge is defined as the fact or condition of knowing something with familiarity gained through experience or association and acquaintance with or understanding of a science, art, or technique.² Complete knowledge of the

facts surrounding TBI belongs to the professional medical providers and researchers; however, knowledge of the fundamentals of TBI remains the obligation of the command team.

Traumatic brain injury has produced a high incidence of casualties among U.S. troops fighting in Iraq and Afghanistan. The propensity of this injury and the damaging, long-term chronic consequences experienced by the soldiers on these fronts has led to TBI being labeled a signature injury of these recent wars. According to U.S. Department of Defense Military Health System, 202,281 U.S. military service members were diagnosed with traumatic brain injury in the period from 2000 through fourth quarter 2010. But improved body armor and helmets, evacuation techniques and much enhanced combat care have reduced mortality rates.

Blast injuries and the explosions that cause them are not a new phenomenon, but in the recent wars, the presence of several additional factors has changed the TBI landscape and the focus of the medical practitioners and researchers who treat and study it. The spike in TBI the rate has prompted new care models to be developed and allowed for the funding of state of the art research and treatment centers that are focused on treating TBI. The recent revelations in TBI research have provided commanders with an unprecedented wealth of material for study in these respective areas. Access to information has never been easier, yet it must remain a command team priority to gain the knowledge and requisite understanding before developing a comprehensive action plan.

The complex properties of a blast react with the body and brain in a unique way to cause injury. This refutes the long-held theory that neurological impairments caused by blast injury are rare since the skull provides excellent protection to the brain. Even in the absence of life-threatening injuries, explosions heat and accelerate air molecules, causing a rapid milli-second increase in air pressure; this combination makes blast-induced neurotrauma (BINT) so insidious.

“It is not the classical way most people envision a brain injury as a direct impact to the head,” says Dr. Ibolja Cernak, medical director, biomedicine business area Johns Hopkins University Applied Physics Laboratory. “Rather, in the acceleration of blast injury the whole body is exposed to huge amount of kinetic energy.” In BINT, other injuries can be caused by fragments of other things hit by the explosions and the impact of the body being propelled through the air and hitting the ground.

According to Cernak, an injury sustained through a blast is unique: The shock wave or blast wave comprises a high-pressure front that compresses the surrounding air and is followed by a negative pressure phase. This is the major factor of primary blast-induced injury, she says. “Primary blast envelops the whole body, and interacts with all organs and organ systems, including the brain. The resulting rippling effect generates oscillating waves in the blood that spread throughout the body, delivering the kinetic energy of the blast wave to organs including the brain which are different from and remote from the initial point of contact.

Once delivered, this kinetic energy initiates organic changes; brain cells die, and initiate functional changes in deep brain structures that control things like balance, blood pressure and speech. The blast can also compromise the blood-brain barrier, which typically protects the central nervous system from substances that could cause dangerous inflammation. It is the inflammation or inflammatory molecules that work to create irreversible brain damage; it’s as if the body is engaged in a tug of war.

The brain tries desperately to right itself and regain functions of other organs. Working on overload, its metabolism increases, the brain’s attempt to compensate is ultimately overrun and the deleterious effects of the blast take over.

“Bottom line,” says Dr. James Kelly, a neurologist and director of the National Intrepid

Center of Excellence (NICoE), “the brain’s function of what is necessary to preserve life comes first and the basic fight or flight reflex takes over seconds following a blast. But the residual effects and the metabolic changes that occur days later when the brain’s metabolism has slowed down reflect what the individual is really feeling.”³

Having presented the above information, command teams are armed with a baseline knowledge of TBI, its causes and its effects. This knowledge, coupled with the resources listed in Appendix G will provide command teams with the necessary information and knowledge required to gain an understanding of TBI and its effects on the wounded warrior, his family, and the unit. Command teams who lack this basic knowledge are sure to miss the indicators presented by their suffering Marines and Sailors, leading to a lethal gap in which many wounded warriors may disappear.

Traumatic Brain Injury (TBI) and Post Traumatic Stress Disorder [to be discussed in the next sub-section] have become known as the signature wounds of the ongoing wars in Iraq and Afghanistan.⁴ Although many advances have been made in both military and civilian medicine in regards to understanding these injuries, the medical community has failed to agree upon a definition for TBI. Appendix A lists these various definitions. It is important for the commander to understand these discrepancies, as they will affect the wounded Marine’s diagnosis and follow-on treatment, depending on where the Marine receives treatment. Fortunately, the Department of Defense has perhaps the most detailed definition of TBI, referenced in Table 1:

DoD TBI Definition

- A traumatically induced structural injury and/or physiological disruption of brain function as a result of an external force that is indicated by new onset or worsening of at least one of the following clinical signs immediately following the event:
 - Any period of loss of or a decreased level of consciousness (LOC)
 - Any loss of memory for events immediately before or after the injury [post-traumatic amnesia (PTA)] Any alteration in mental state at the time of the injury (confusion, disorientation, slowed thinking, etc.)
 - Neurological deficits (weakness, loss of balance, change in vision, praxis, paresis/plegia, sensory loss, aphasia, etc.) that may or may not be transient
 - Intracranial lesion
- External forces may include any of the following events:
- Head being struck by an object
 - Head striking an object
 - Brain undergoing an acceleration/deceleration movement without direct external trauma to the head
 - Foreign body penetrating the brain
 - Forces generated from events such as blast or explosion, or other force yet to be defined

***Table 1*⁵**

It is crucial that command teams are familiar with TBI diagnosis criteria in order to lead their wounded warriors through the triage and treatment process. Confusion over what constitutes a diagnosis of TBI may lead many medical providers to under-diagnose or oversimplify the injury. One example of this misunderstanding is that the term traumatic brain injury is frequently used synonymously with the term concussion. This seemingly small difference may lead to the belief that most of these injuries are minor and can be “walked off”.⁶ Although some TBI patients do recover completely, the majority require treatment for extended periods.⁷ Although the symptoms may be similar following an injury, a TBI will have lasting effects and potentially impair the patient’s cognitive abilities for life. Misunderstandings such as

these not only contribute to the lack of understanding of this debilitating injury, but also contribute to the stigma associated with an often-invisible injury as it occurs within the unit.

Interviews with several TBI patients reveal many similarities in misdiagnosis and frustrations with providers who “just don’t get it.”⁸ As is the case with many patients, the author was often prescribed scores of medicines to alleviate the symptoms of chronic migraine headaches and was once suspected of having Meniere’s Disease, a disease of the inner ear affecting equilibrium, instead of realizing that the symptoms may have been related to an undiscovered TBI. To be fair, in the early years of OIF and OEF, there was precious little research in the area, but this can hardly excuse on neurologist’s comments during an appointment, “Big deal, it’s like you hit your head after falling down- you’ll get better soon... Just take some motrin.”⁹ Of course the description of the events leading up to the injury and the years of chronic symptoms should have clued the doctor in, but sadly, veterans receive comments such as these regularly.

Command teams must not only possess the knowledge of TBI, but also some of the implications for diagnosis and misdiagnosis. For instance, if a junior Marine has repeatedly complained of headaches and dizziness and has been in the proximity of a significant blast, it is imperative that the command team gets involved in his treatment process and follows up with the Marine and his provider. A diagnosis of chronic migraines may indeed be accurate, but the responsibility lies with the command team to ensure that TBI is ruled out of the equation. A misdiagnosed TBI can lead to years of needless suffering and have negative effects on any disability rating the Marine may receive upon separating from the service.

It is clear that TBI represents a clear challenge to command teams, wounded warriors, and their families. Advancements in body armor and vehicle blast protection have undoubtedly contributed to the survivability of America’s warriors; oftentimes leaving the warrior with

wound which would have previously proved lethal. However, TBI represents a physical injury that is both diagnosable and treatable. PTSD, on the other hand, represents a more distinct challenge for command teams and medical care providers. TBI and PTSD symptoms are closely linked, yet it is important for command teams to understand the nuances of PTSD before they can develop comprehensive leadership and treatment courses of action.

Post Traumatic Stress Disorder

PTSD is a clinical diagnosis; therefore it is the responsibility of command teams to understand the criteria for diagnosis in the same way that they must understand that of TBI. The definition and understanding of Post Traumatic Stress Disorder has evolved similarly to that of TBI as a result of the surge of casualties stemming from these wars. For mental health providers and clinicians, the Diagnostic and Statistical Manual for Mental Disorders-Version IV, remains the premier source for diagnosis and subsequent treatment. The medical community uses a set of clustered symptoms in relation to a traumatic event in order to define Post Traumatic Stress Disorder. Refer to Appendix B for a detailed explanation. Below, the DSM-IV has evolved with the research and remains the standard diagnostic tool for all mental health professionals and promises to continue to evolve with the next version, the DSM-V.

The diagnostic criteria for PTSD include a history of exposure to a traumatic event meeting two criteria and symptoms from each of three symptom clusters: intrusive recollections, avoidant/numbing symptoms, and hyper-arousal symptoms. A fifth criterion concerns duration of symptoms and a sixth assesses functioning.¹⁰

Command teams will undoubtedly wrestle with the lasting effects of TBI and PTSD within the ranks of their units. These injuries can have a detrimental effect on the unit and its performance. Marine Corps leadership has made a concerted effort to reduce the rates of suicide and substance abuse cases, attacking symptoms of a larger problem. Command teams are the first

line of defense when it comes to identifying and treating their wounded warriors and preventing tragedies within their units. The rates of PTSD have continued to rise in the military¹¹, with many professionals considering that repeated combat deployments have a compounding effect of the condition. PTSD is rampant in units, with most cases going undiagnosed for a variety of reasons, to be discussed later. If left untreated, PTSD can be a degenerative condition that leads to unnecessary stress on the individual and unit. Wounded warriors suffering from PTSD, whether undiagnosed or not, often resort to substance abuse as a method of self-medication. Substance abuse, domestic problems, hazing, and legal problems are often manifestations of untreated PTSD.¹² If these problems occur within a unit with enough frequency, they can have a paralyzing effect on the unit's performance and morale.

The overlap of symptoms between TBI and PTSD make diagnosis and treatment difficult and reduce the ability of Marines to understand how to effectively lead their wounded Marines through treatment. During much of the last decade, the terms TBI and PTSD were used together and often interchangeably. Command teams must be careful not to make this same mistake. TBI is an injury to the brain that presents itself in a number of different ways, whereas PTSD is a psychological disorder, or a moral injury, that presents itself in similar ways. Refer to Appendix C for clarification between the overlap in symptoms between these two diagnoses. This confusion often leads to misdiagnosis, furthering the stigma of these wounds, and doing a disservice to the Marines suffering from either or both. There have been documented incidents of patients being diagnosed with schizophrenia or other mental disorders only to be re-diagnosed as suffering from TBI upon further evaluation.¹³ TBI and PTSD are two separate injuries, each requiring separate modalities of care, but in comorbid (carrying diagnosis for two or more injuries/illnesses) cases, they must be treated simultaneously.¹⁴ Only recently has the medical

community begun integrating TBI and PTSD treatment in an effort to address many previously unresolved symptoms when these two diagnoses were treated separately.

The treatment of wounded warriors with comorbid diagnoses, patients who are diagnosed with TBI and PTSD, presents further challenges for the command team. Suffice it to say, if a Marine suffers a TBI during an enemy attack in which his fellow Marines have been killed or maimed, he may very well suffer from both conditions. Special care must be taken when treating these wounded warriors, as one injury may overshadow the other and lead to the other condition's dismissal.¹⁵ Research indicates that the rates of comorbid TBI and PTSD are extremely high. Many studies have found it near impossible to find a wounded warrior diagnosed with TBI that does not also carry the diagnosis or meet the criteria for PTSD.¹⁶ This high rate of comorbidity should serve as a wake-up call Marine leadership. This complicated diagnosis not only requires a robust medical treatment continuum, but leaders that are equipped to see the wounded warrior through the many obstacles of the healing process.

Given the prevalence of TBI, PTSD, and comorbid diagnoses in OEF and OIF veterans, the overlap in symptomology can make diagnosis a challenge. Command teams must be especially vigilant in looking for the subtle symptoms that can indicate an underlying injury. For instance, Marines with either or both conditions might exhibit difficulty sleeping, irritability, aggressive outbursts, difficulty concentrating, memory problems, and a decline in social and occupational functioning. Thus, veterans who demonstrate cognitive symptoms of PTSD such as problems with memory, attention, concentration, and difficulty processing new information may be misdiagnosed with TBI. Likewise, veterans with TBI might demonstrate personality changes such as impulsiveness, aggression, and a volition that could be mistaken for PTSD. Furthermore, PTSD might exacerbate cognitive deficits in individuals with TBI.¹⁷

The likelihood that a Marine may be suffering from both TBI and PTSD further highlights the need for education among leaders at all levels. The likelihood of these symptoms being overlooked or misdiagnosed can put the wounded warrior in further distress and exacerbate the symptoms. Recent research shows that while TBI may heal with time, PTSD is the opposite, often worsening over time without intervention.¹⁸ Table 2 provides a summary of the overlap in symptoms between PTSD and TBI.

Symptoms of PTSD and TBI		
<u>Symptom</u>	<u>ASD and PTSD</u>	<u>TBI</u>
Dissociation		
Emotional numbing	Present	Present
Reduced awareness	Present	Present
Depersonalization	Present	Present
Derealization	Present	Present
Amnesia	Present	Present
Reexperiencing		
Recurrent images	Present	Present
Nightmares	Present	NA
Distress on reminders	Present	NA
Avoidance		
Avoid reminders	Present	NA
Social detachment	Present	Present
Diminished interest	Present	Present

Table 2¹⁹

If TBI is an injury, no less serious than any other combat related wound, PTSD can be considered a moral injury. The Marine Corps has chosen to address PTSD as Post Traumatic Stress.²⁰ Marine leaders recognize that the effects of combat and the strong likelihood of resulting PTSD are not a disorder, but rather a natural reaction to unnatural circumstances. By removing the word “disorder”, the Marine Corps has not only acknowledged its high rate of diagnosis, but also attempted to remove some of the stigma associated with PTSD. PTSD, however, remains the clinical diagnosis and is unlikely to change within the medical community.

With the recognition that PTSD is common and presents with many of the same symptoms as TBI, the Marine Corps considers PTSD to be a moral or spiritual injury.²¹ PTSD is an injury that requires treatment and is no less serious than serious than other combat wounds.

Armed with the knowledge of PTSD and TBI, leaders are more likely to take action in the treatment of their wounded warriors. However, knowledge is not enough. Currently, commanders and Marines across the Corps receive classes on TBI and PTSD, but precious little is taught about what to do with the knowledge presented. Knowledge must be transformed into understanding before a command team can select a viable course of action. These wounds are as old as warfare itself, and as military professionals it is imperative that the physical and mental aspects of combat be studied in the fullest. General Amos revised the Commandant's Professional Reading List to include several titles that deal with the physical and mental wounds of war.²² In addition to the knowledge of the causes, signs and symptoms of these hidden injuries, it is imperative that Marine leaders know where to turn when they have a Marine in distress. Appendix G provides the command team with a list of resources and their respective points of contact. When combined with understanding and action, commanders will lead their units more effectively. Armed with an understanding of how these injuries affect their wounded warriors and their units, commanders can have a positive impact on their Marines and their families.

Understanding

Understanding of how these injuries affect the wounded warrior, his family, and the unit is another critical pillar required for leading wounded warriors through the healing process. Understanding is defined as the power of comprehending; *especially*: the capacity to apprehend general relations of particulars and the power to make experience intelligible by applying

concepts and categories.²³ In order to have an understanding it is necessary for the leader to have the prerequisite knowledge discussed above. Understanding of the circumstances surrounding these wounds allows the command team to be empathetic and develop viable courses of action for educating and treating his Marines. This section will build upon the knowledge of TBI and PTSD with an emphasis on how these injuries will affect the command teams, the units, wounded warrior, and their families. The understanding gained from this section will allow command teams to decide upon viable leadership courses of action surrounding these issues. The understanding of these injuries and the mutual respect that likely follows also serves to enhance the unit's esprit de corps and confidence in their chain of command.

Many of the effects, or symptoms of the injuries, the wounded warrior experiences have already been addressed; however, it is crucial that the command team communicate with the wounded warrior, his primary case manager, and his other care providers. The continuum of treatment is complicated and varies from patient to patient, further reinforcing the need for command teams' involvement in individual cases. Many of the treatment regimens include the use of prescription medicines that include anti-depressants, anti-anxiety medicines, pain medications and other prescription narcotics that can have an adverse affect on the Marine and his performance. The likelihood for prescription medicine misuse and abuse is high, and especially dangerous when combined with the effects of alcohol. The potentially deadly combination of prescription medication, alcohol and mood disorders puts a wounded warrior at an increased risk of suicide or accidental overdose. Marine leadership must be aware of the medications and the rules surrounding their administration. Medication management must not be left to the wounded warrior alone.

Command teams are well aware of the increased emphasis on the prevention of suicide and substance abuse within their units. These events are often symptoms of an undiagnosed injury or illness. Command teams should make it a top priority to “get left of the boom”. The Marine Corps has seen an alarming increase in the rates of suicide, domestic violence, and alcohol and substance abuse. Suicide rates in 2012 exceeded the number of killed in action (KIA) casualties in Operation Enduring Freedom during the same time period.²⁴ This disturbing trend shows no promise of reversing, and is likely to increase as combat operations draw down and Marines find themselves out of the blurring pace of combat deployments and without a combat mission to focus on. The mentioned statistics are certainly problems to be dealt with the utmost of urgency, but are likely the symptoms of a larger problem. Among the symptoms of TBI and PTSD lay these very same destructive actions.

Many Marines and sailors who commit suicide have been diagnosed with PTSD, TBI, or both.²⁵ This problem usually begins and ends at the small unit level- the domain of the command team. The alarming rise in annual suicide rates throughout the Armed Forces has led to an increased emphasis on mental health and exposed the shortfalls that exist between the number of those requiring treatment and the providers that are available.²⁶ This trend is not coincidental. The National Football League (NFL) is also responding to a rise in suicide among its players and has partnered with the DoD in order to further study the effects of TBI on behavior and performance. However, until more research becomes available, command teams remain at the front line of the battle, playing both offense and defense- prevention and treatment. Given the national attention these injuries have received, it is clear that TBI and PTSD have tragic implications for the patient, the unit, and the team.

Suicide and suicidal behaviors are behavioral disturbances with strong links to both TBI

and PTSD. Cognitive distortions, depression, and other mood disorders often mask the root cause of the behavior. Research indicated that traumatic combat experience, coupled with emotional numbness and feelings of being burdensome (residual guilt) increase the risk of suicide.²⁷ The likelihood that veterans will abuse alcohol and/or illegal or prescription drugs only serves to increase the likelihood of suicide or accidental overdose. The rise in suicides among active duty veterans serves as an indicator of an overburdened medical system and a Marine Corps culture that has yet to fully embrace mental health issues.

Numbers for the current year and for the immediately preceding year are updated on a quarterly basis. Other numbers are updated annually.*

Click a year to view report of the breakdown by severity and by Armed Forces branch. Incident diagnoses by calendar year.

2000: 10,963	2005: 12,211	2010: 31,407
2001: 11,830	2006: 16,958	2011: 33,149
2002: 12,470	2007: 23,174	2012 Q2: 17,136
2003: 12,898	2008: 28,567	2000 - 2012 Q2: 253,330
2004: 13,312	2009: 29,255	

*2000 - 2012 Q1 cumulative totals updated as of 20 Aug 2012
 *2012 Q2 and 2011 annual numbers updated as of 20 Aug 2012
 *2010 annual numbers updated as of 10 Feb 2012
 *2000 - 2009 annual numbers updated as of 16 May 2011

Source: Defense Medical Surveillance System (DMSS) and Theater Medical Data Store (TMDS)
 Prepared by MHS Office of Strategic Communications

Table 3²⁸

The delta between reported casualty rates and the throughput of just one facility such as the NiCOE are staggering. To be fair, the NiCOE is not the only TBI treatment facility available, but it is certainly the most state of the art, and its throughput is on par with those of other similar facilities. One way the NiCOE is attempting to close the gap is by opening satellite NiCOE clinics at all of the major Marine bases. The NiCOE satellite facility at Marine Corps Base in

Camp Lejeune, North Carolina officially broke ground for construction in 2012. Despite these efforts, there remains a serious deficit in the capacity of our medical system to care for all of the wounded warriors. Table 4 shows diagnosed PTSD rates throughout the Department of Defense for both OIF and OEF, through 2010. The downward trend is consistent with the drawdown in forces in OIF. This downward trend presents both a challenge and an opportunity for command teams and their respective units. Research indicates that early treatment for TBI and counseling before the onset of PTSD greatly reduces the number of casualties that must be evacuated from theatre or who are deemed no longer fit for continued active service.

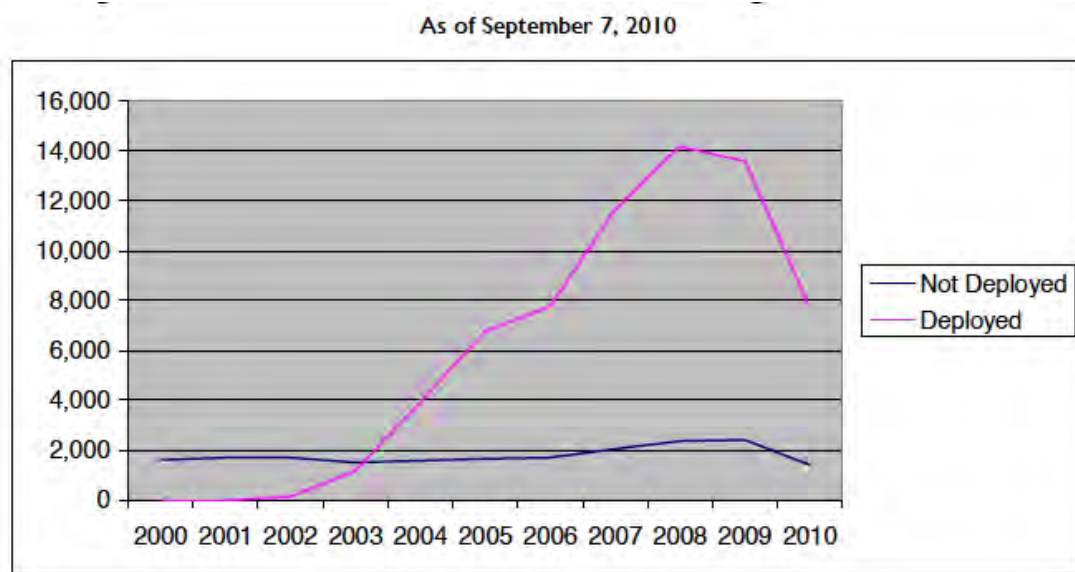


Table 4²⁹

The disparity in the number of patients diagnosed with the number of patients treated is staggering. It is also important for the command team to understand that these statistics only report the number of patients officially diagnosed, meaning that there is likely a large population of wounded warriors who are silently suffering. Despite the efforts within the medical community to stem the tide, the fact remains that their resources are limited and finite. In order

for those who are silently suffering to receive the treatment they require, Marine Corps leaders must address this issue head on. By cultivating a culture of knowledge, understanding, and action, Marine leaders can attend to their responsibility to keep faith with their wounded warriors.

Understanding of these injuries also means being alert to some of the telltale symptoms. Sleep disorders, anxiety, cognitive dysfunction, and depression, guilt, avoidance, and anger are some of the most common symptoms surrounding TBI and PTSD.³⁰ These symptoms each present their unique challenges, and are especially dangerous when they are simultaneously present. It is essential that the Marine be accounted for daily by his command team throughout the healing process, whether or not he is assigned a full duty, light duty, or limited duty status. The wounded warrior must be kept engaged with the unit to the greatest extent possible and assigned leadership “over-watch” throughout the process. The combination of medications and other symptoms the wounded warrior experiences may present may complicate the unit’s mission, but the Marine or sailor must not be cast off to the sideline and left alone to drift throughout the workweek and weekend. The potential for isolation, lack of accountability, and feelings of worthlessness only serve to deepen the mood issues and greatly increase the previously mentioned risk factors to the wounded warrior.

In spite of the many improvements to the leadership infrastructure and advancements in medical treatment, statistics indicate that only a small percentage of those affected with TBI and PTSD are receiving the required treatment. Figure 1 shows the throughput of patients at the NICOE, yet when compared with reported and estimated TBI and PTSD casualty rates (see table 3), the Marine Corps is falling short of the mark. It is up to the command team to close this gap. The numbers of wounded warriors who have been diagnosed and treated represent the proverbial

“tip of the iceberg”; there are likely thousands of Marines and sailors silently suffering from these wounds- they are waiting for their command team to set the command climate that fosters accountability and encourages wounded warrior care in a thoughtful manner.

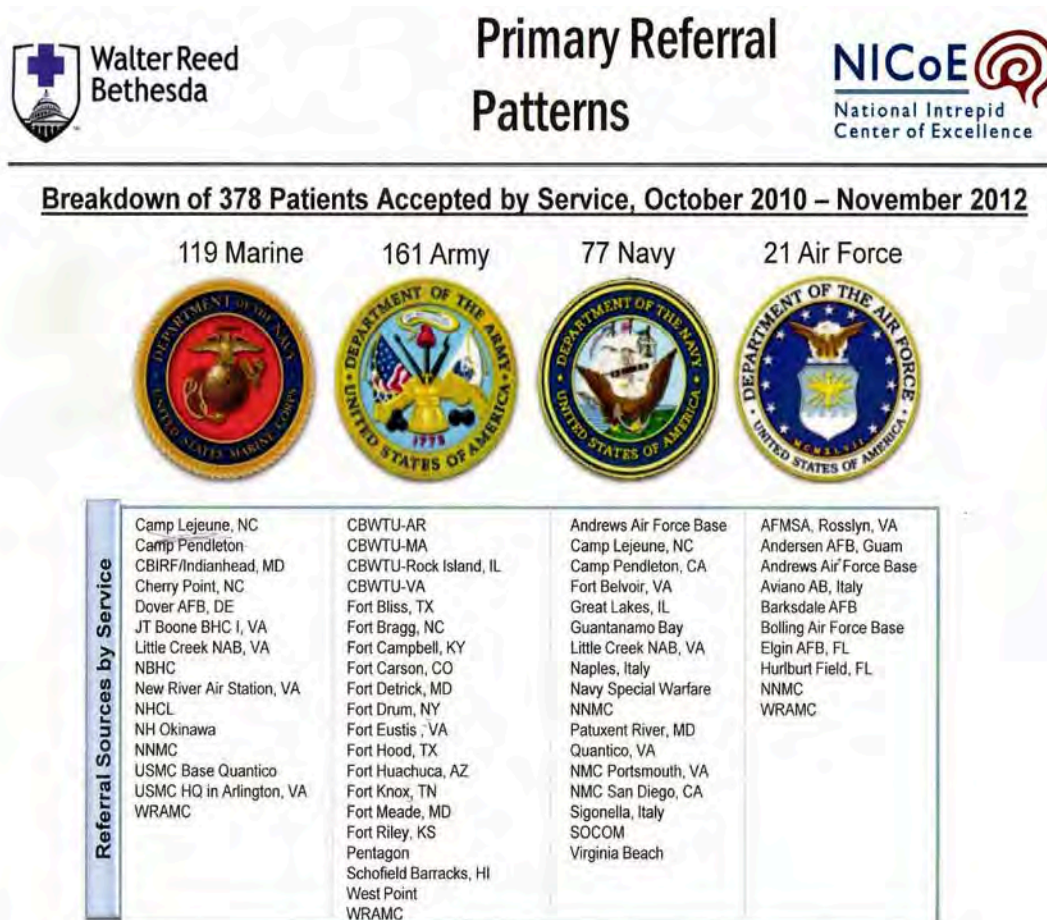


Figure 1³¹

There are many reasons why a wounded warrior may not voluntarily seek care. Primary among these is a fear of letting his fellow warriors down, as well as a fear of being alienated from the unit and his friends. The stigma associated with these invisible wounds varies between commands, but it remains a common experience amongst patients suffering from TBI and PTSD.

In an effort to reduce the stigma that is associated with these injuries, the Marine Corps has taken to addressing all but the most acute cases as Post Traumatic Stress Disorder. The Commandant of the Marine Corps, General James Amos, has been a champion of wounded warrior treatment since his days while serving as the ACMC:

As Commandant, I'm the senior advocate in the Marine Corps for Marines with PTS and TBI. I represent the needs of our wounded warriors and all of our Marines to the chain of command, the Congress and to the medical community. I've spoken to leaders in the medical profession and advocated for better diagnostic and increased treatment options for Marines with severe injuries, including posttraumatic stress and traumatic brain injury.³²

The former ACMC, General Joseph Dunford and his successor, General John Paxton, have made the treatment of TBI and PTSD one of their top priorities. The ACMC's vision for proactive leadership in the face of this crisis was apparent in the comments he made during the 2011 Commander's Course held aboard Marine Corps Base Quantico:

Dunford said the last decade had been a high-water mark for Naval trauma care, but noted that the military generally takes years to figure out how to deal with new problems. "We're effecting change from the top down. We're not waiting for the normal process to take effect"³³

It is clear that the Marine Corps' senior leaders have the understanding required to further advancements in treatment and enhance the understanding of these injuries as it related to combat readiness and resiliency. Command teams have the responsibility of carrying out the Commandant's orders and commander's intent. Command teams will ultimately be held responsible for failure to address these issues.

Due to the insidious nature of TBI and PTSD, it is crucial that command teams be proactive in their screening and assessment programs. Although Post Deployment Health Surveys are standard screening tools, it is the commander's responsibility to ensure that Marines feel comfortable in filling out the surveys accurately and honestly. It is also the commander's

responsibility to ensure that issues identified in these surveys are addressed appropriately. A recent MarAdmin message specifically addresses the commander's role in regard to these surveys.³⁴ Command teams must urge honesty in reporting and follow it up with meaningful care management and leadership.

As discussed, one of the main problems facing the Marine Corps is that there are many wounded warriors who have not come forward and asked for help. These silently suffering Marines and sailors struggle through their day and often collapse physically and emotionally when they return home. The families are likely struggling in silence as well, changing the proverbial bandages, and hoping that these injuries will heal on their own so the Marine can continue on with his career. Wounded warrior spouses, families, and caregivers face many of the same struggles and fears of the associated stigma that the individual Marine or sailor faces. They may also feel betrayed and let down by the chain of command who seems largely ignorant to the injuries. The Family Readiness Officer (FRO) and the commander must make a concerted effort to educate the families and let them know that the chain of command is there to help. Families must not be burdened with these injuries in isolation.

Armed with this knowledge and understanding, leaders and their Marines are far more likely to observe variations in behavior following traumatic events. Command teams now have a working foundations from which to develop a feasible course of action. Early intervention at the command team level and a subsequent correct diagnosis by a qualified provider is essential to the healing process. Identifying wounded warriors and getting them into the treatment pipeline is one of the most difficult tasks faced by command teams. Despite the significant resources and organizations devoted to the care of wounded warriors, it remains difficult for commanders and their Marines to enter these treatment programs. Appendix G lists some primary resources for the

command team to get their wounded warriors started in treatment. Once wounded warriors have been identified and enter the treatment pipeline, leaders can leverage the mentioned supporting establishment and the medical community in order to assist them in taking care of their people. Without the prerequisites of knowledge and understanding, command teams will likely fail in their mission to care for their wounded warriors and their families; they will fail to implement a viable course of action.

Action

Developing courses of action is something all command teams are intimately familiar with. The same analytical and recognition decision making processes leveraged in the Marine Corps Planning Process can be used in the identification and subsequent treatment of the unit's wounded warriors. Marines are known for taking action and making bold and decisive decisions- the same spirit must be leveraged when it comes to troop welfare. It is the mission of the command team to take the knowledge and understanding gained about TBI and PTSD and translates it into a course of action and language that the most junior Marine can understand and implement. Command teams must develop a mission and intent for taking care of their wounded warriors and supervise its accomplishment.

Positive identification is a term that all Marines are familiar with, having used it as part of the Rules of Engagement. Positive identification refers to having confirming that a potential target is in fact an approved target prior to taking action. It requires that a Marine make a rational decision before pulling the trigger. The same methodology can be applied to assessing Marines who may be suffering from TBI and PTSD. One of the existing tools available to the command team is the Marine Corps Counseling Program. In order to help identify the at-risk population, this program can be used to narrow the search parameters. For instance, a command team may

use the counseling program to identify populations of Marines who have a previous combat deployment, multiple combat deployments, saw action against the enemy, or witnessed the horrors of combat. From here, the command team can target these groups more specifically with programs aimed at each group. This approach makes the application of focused individual leadership much more feasible without alienating the Marines in front of large groups. This type of leadership will foster trust in the command team; a crucial first step.

Trust is an essential ingredient in any relationship, and no one more so than between the command and the wounded warrior. The Marine Corps demands that a Marine risk his life in the accomplishment of a mission. It is fair that the Marine should be able to trust in his senior leadership, that his life will not be frivolously spent and that he will be cared for with dignity and respect should he become injured. Trust is earned, and can reinforced by a command team taking a personal interest in the care of each wounded warrior, ensuring he gets the level of care he deserves. Developing this trust can also have a compounding effect within the unit, as word of mouth spreads that command truly does care for each Marine in the unit. Esprit de Corps and mission accomplishment will naturally follow.

Akin to trust, Empathy can be considered essential to developing trust and honest communication. First, through the knowledge and understanding of TBI and PTSD, along with the shared hardships of a combat deployment, a foundation of common experiences between the command team and the wounded warrior is established. Despite all of the advancements in modern medicine and the supporting establishment, nothing is more important to the wounded Marine than acknowledgment that the Marine is wounded and that he will get the care he deserves. It is fair to say, “that if the Marine Corps broke him, the Marine Corps will fix him”. This warrior-to-warrior conversation may take place in the course of an hour or over the course

of many months, but it is an essential investment of time that the command team must make. By validating the injury and discussing the circumstances surrounding it, the leader can then leverage his knowledge and understanding of TBI and PTSD in order to build a foundation of trust that will likely last a lifetime.

Aside from the discussed fear of the associated stigma surrounding these injuries, a wounded warrior may be dissuaded from seeking help for fear of repercussions to his career or advancement. If a Marine is put on limited duty, he has two sequential six-month periods in which to return to full-duty status. Waivers beyond this period are usually not given favorable consideration.³⁶ If the situation permits, and it is in line with the wounded Marine's wishes, commanders must seek opportunities to retain their wounded Marines in their units while they receive treatment. Opportunities for special assignments, operational planning teams, and rehabilitation squads may prove useful. Many wounded warriors will have the chance to recover without having to be officially put on limited duty, if the command team is willing to work closely with the medical providers.

Once Marines have been identified as potential candidates for further evaluation, it is imperative that the command team focuses its effort on getting the wounded warrior referrals through the Marine's primary care manager/provider (PCM). This process can prove laborious and frustrating, especially if the PCM is relatively unfamiliar with TBI and PTSD. The appendices list several valuable resources with descriptions of key programs. Primary among these programs is the Wounded Warrior Regiment (WWR) and its subordinate battalions. These units are specifically task organized to advise and assist commanders as they help their Marine navigate the treatment process. In the event that the Marine requires extensive treatment and is placed on limited duty, the Wounded Warrior Regiment will advise the command on the next

steps and ensure a seamless transition if the wounded warrior is to become part of the WWR during his treatment.

Once a Marine has been treated and is able to rejoin his unit and fulfill his daily responsibilities, it is essential that the leader maintain his vigilance. TBI and PTSD are wounds that are likely to re-emerge or reoccur when the wounded warrior is engaged in combat. A methodology similar to sports injury rehabilitation may prove useful to the commander. If a Marine had just recovered removed the cast from a shattered leg, he would not be expected to play football or run a fitness test without dire circumstances; the same can be said for TBI and PTSD. These injuries require careful monitoring, often for years after the initial treatment regimen. It is also likely that prescription medications are still being used and must be accounted for in the planning of training and operational risk management.

A Marine's trust in his command team is essential. Nowhere is this truer than in combat and in dealing with its aftermath. In order for a wounded warrior to submit himself to the process of treatment, he must have trust in his command team. He must know that they will not betray his confidence or abandon him. Conversely, the command team must trust the good intentions of the wounded warrior, acknowledging that a difficult road lies ahead.

Conclusion: The Way Ahead

Leaders are charged with the carrying out of their unit's mission and the welfare of their Marines, both healthy and wounded. The Marine Corps has made significant strides in developing a care system that is focused on the individual Marine's recovery. Each leader should have a vested interest in the well being of his wounded Marines, only gained through knowledge, understanding and a relationship built on trust. A command teams course of action should reflect all of these components.

A healed wounded warrior is an asset to the combat unit. His combat experience, the trust established, and his courage in returning to the fight serve to increase the esprit de corps of the unit and have a contagious effect on the fighting unit. Unit cohesion is essential to its fighting spirit and the health of the individual Marines. Retaining wounded warriors throughout the treatment continuum is an important piece of unit cohesion and an essential part of the warrior culture in which Marines and Sailors thrive.

On battlefields where exposure to high explosives and their concussive blasts is the norm, repeated concussive events and the terror of war have become the new “ordinary life” for a Marine. The aftermath of these wars will leave us with a population of wounded warriors who need our immediate attention, despite the lack of visible scars. The Marine Corps is incredibly savvy at destroying the enemy, and with thanks to advances in medical care and armor protection, incredibly resilient. The command team’s responsibilities outlined in this work serve as the first step in wounded warrior triage; it is time to stop the “invisible” bleeding.

Although the focus of this paper has been on the command teams, the institution must continue to invest in and improve its wounded warrior care infrastructure. Communication between Navy Medicine, primary care providers, and commanders at all levels must be improved. Continuity and accountability of individual wounded warriors must be improved through the transitions of warrior care waypoints, such as the health clinic, the Wounded Warrior Battalions, the Veterans Affairs Administration, and private care providers. Improvements in the manpower and administration must be made to account for the long-term care requirements for wounded warriors who wish to remain on active duty in a limited capacity. Fitness reports for wounded warriors in care and career advancement are issues that must be

addressed at the institutional level. Despite all of these potential improvements, command teams will continue to have the most profound effect on the care of their wounded warriors.

Finally, the responsibility of leaders to their Marines does not end with the passing of the guidon or the receipt of orders to a new duty station. Due to the lengthy recovery times and the high personnel turnover rates at individual units, it is common for Marine leaders and their wounded warriors to stay in touch for many years. This warrior bond should be fostered and never allowed to wither. For the good leader, the moral imperative of taking care of Marines and their families never ends.

Appendix A

Various Definitions for Traumatic Brain Injury

The United States Centers for Disease Control and Prevention offers the following definition:

A TBI is caused by a bump, blow or jolt to the head or a penetrating head injury that disrupts the normal function of the brain. Not all blows or jolts to the head result in a TBI. The severity of a TBI may range from “mild,” i.e., a brief change in mental status or consciousness to “severe,” i.e., an extended period of unconsciousness or amnesia after the injury. The majority of TBIs that occur each year are concussions or other forms of mild TBI.³⁷

The Mayo Clinic further elaborates on the definition of TBI:

Traumatic brain injury occurs when an external mechanical force causes brain dysfunction. Traumatic brain injury usually results from a violent blow or jolt to the head or body. An object penetrating the skull, such as a bullet or shattered piece of skull, also can cause traumatic brain injury. Mild traumatic brain injury may cause temporary dysfunction of brain cells. More serious traumatic brain injury can result in bruising, torn tissues, bleeding and other physical damage to the brain that can result in long-term complications or death.

The Department of Defense has perhaps the widest accepted definition of TBI:

-A traumatically induced structural injury and/or physiological disruption of brain function as a result of an external force that is indicated by new onset or worsening of at least one of the following clinical signs immediately following the event:

-Any period of loss of or a decreased level of consciousness (LOC) Any loss of memory for events immediately before or after the injury [post-traumatic amnesia (PTA)] Any alteration in mental state at the time of the injury (confusion, disorientation, slowed thinking, etc.)

-Neurological deficits (weakness, loss of balance, change in vision, praxis, paresis/plegia, sensory loss, aphasia, etc.) that may or may not be transient

-Intracranial lesion

External forces may include any of the following events:

-Head being struck by an object

-Head striking an object

-Brain undergoing an acceleration/deceleration movement without direct external trauma to the head

-Foreign body penetrating the brain

-Forces generated from events such as blast or explosion, or other force yet to be defined³⁸

Appendix B

Excerpt: Diagnostic and Statistic Manual for Mental Disorders (DSM-IV) PTSD Criteria

Criterion A: stressor

The person has been exposed to a traumatic event in which both of the following have been present:

1. The person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others.
2. The person's response involved intense fear, helplessness, or horror. Note: in children, it may be expressed instead by disorganized or agitated behavior.

Criterion B: intrusive recollection

The traumatic event is persistently re-experienced in at least **one** of the following ways:

1. Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. Note: in young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
2. Recurrent distressing dreams of the event. Note: in children, there may be frightening dreams without recognizable content
3. Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated). Note: in children, trauma-specific reenactment may occur.
4. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.
5. Physiologic reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

Criterion C: avoidant/numbing

Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by at least **three** of the following:

1. Efforts to avoid thoughts, feelings, or

conversations associated with the trauma

2. Efforts to avoid activities, places, or people that arouse recollections of the trauma
3. Inability to recall an important aspect of the trauma
4. Markedly diminished interest or participation in significant activities
5. Feeling of detachment or estrangement from others
6. Restricted range of affect (e.g., unable to have loving feelings)
7. Sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

Criterion D: hyper-arousal

Persistent symptoms of increasing arousal (not present before the trauma), indicated by at least **two** of the following:

1. Difficulty falling or staying asleep
2. Irritability or outbursts of anger
3. Difficulty concentrating
4. Hyper-vigilance
5. Exaggerated startle response

Criterion E: duration

Duration of the disturbance (symptoms in B, C, and D) is more than one month.

Criterion F: functional significance

The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than three months

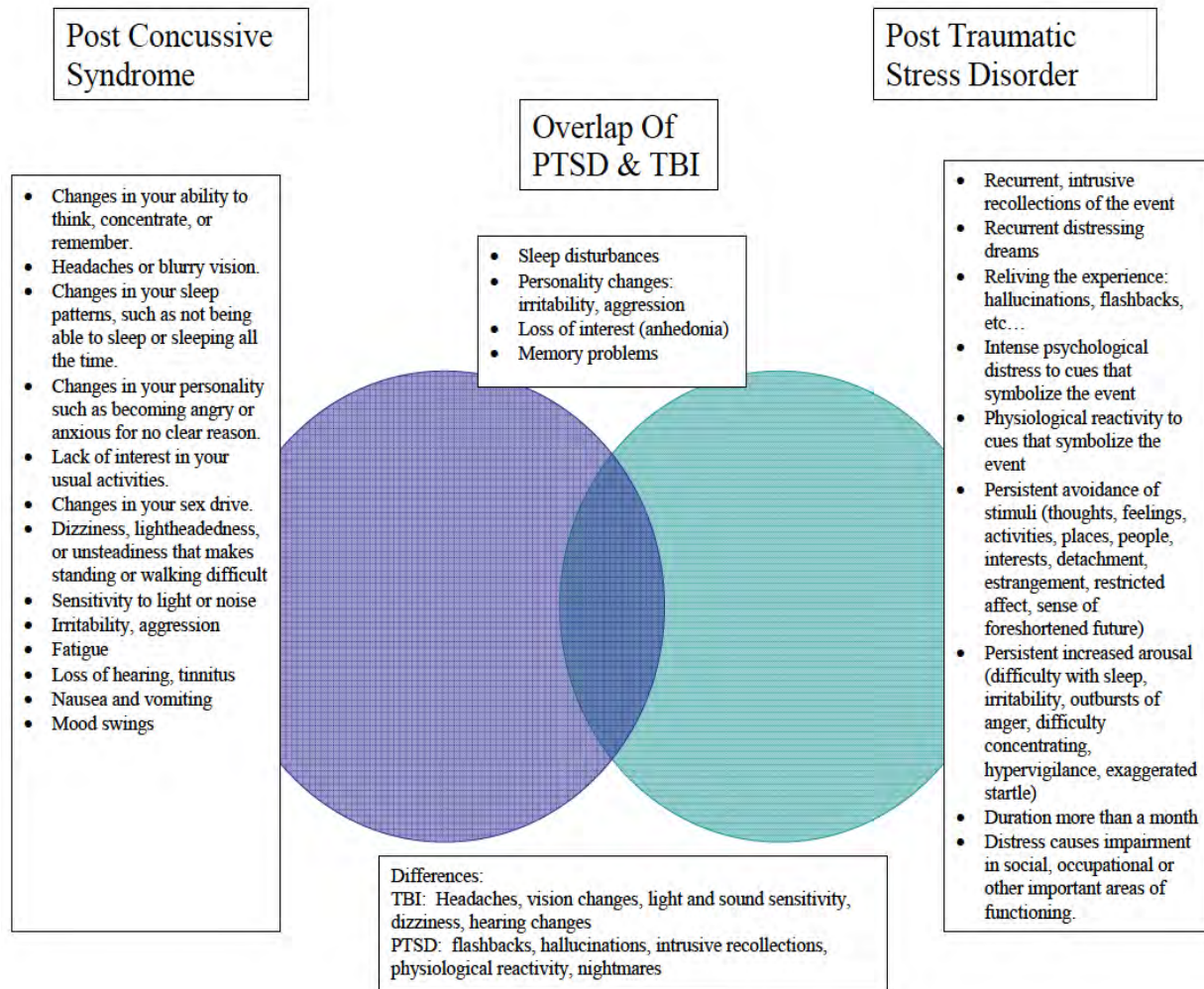
Chronic: if duration of symptoms is three months or more

Specify if:

With or Without delay onset: Onset of symptoms at least six months after the stress

Appendix C

TBI and PTSD Symptom Overlap



Provided By the National Intrepid Center of Excellence (NICoE)

Appendix D

Wounded Warrior Regiment Background ³⁹

Faced with the challenges of caring for wounded Marines and sailors as they returned from Operations Iraqi Freedom and Enduring Freedom, the Marine Corps recognized the need to stand up a command structure with the necessary resources to care for wounded warriors. Operational units were on a continuous rotational deployment tempo that left them unable to see to the proper care of their warriors who could not make the next deployment. The Wounded Warrior Regiment and its supporting infrastructure has allowed the Marine Corps to remain focused on combat deployments while keeping simultaneously caring with their wounded warriors left at home.

The Marine Corps, through the Wounded Warrior Regiment (WWR), has made an enduring commitment to keep faith with those who have sacrificed much. When a Marine is wounded, falls ill, or is injured, comprehensive and coordinated medical and non-medical support becomes vitally important. The WWR was established to provide and facilitate assistance to wounded, ill and injured (WII) Marines and their family members throughout the phases of recovery. The WWR is a single command with a strategic reach that provides non-medical care to the total Marine force: Active Duty, Reserve, Retired, and Veteran Marines. This non-medical care is provided whether Marines are at major military treatment facilities, at home away from bases and stations, or with their operational units.

The Regimental Headquarters, located in Quantico, VA, commands the operation of two Wounded Warrior Battalions located at Camp Pendleton, Calif. (WWBn-W) and Camp Lejeune, N.C. (WWBn-E), and multiple detachments in locations around the globe, including at major Military Treatment Facilities and VA Polytrauma Centers. Because of the unique needs of

Reserve Marines, the WWR has the Reserve Medical Entitlements Determination (RMED) Section to specifically assist wounded, ill or injured (WII) Reservists. For more information about support to WII Reservists, please see the Support to Wounded, Ill and Injured Reserve Personnel sheet.

The Marine Corps care model is unique in that its approach is to ensure recovering Marines return to their operational forces as quickly as their medical conditions will allow. Whether a WII Marine is assigned to the WWR or remains with their parent command, each individual requires varying levels of support and care, depending on their stage of recovery.

Appendix E

Operational Stress Control and Reduction Background ⁴⁰

Beginning in 1999, in the 2d Marine Division at Camp Lejeune, North Carolina, the U.S. Marine Corps developed and fielded a new type of partnership between warfighters and mental health professionals—the Operational Stress Control and Readiness (OSCAR) program. OSCAR differs from any previous military mental health effort in that OSCAR ideally embeds mental health expertise directly in operational units at the level of the regiment, rather than attaching mental health personnel to external medical treatment facilities or external combat stress teams. OSCAR psychiatrists, psychologists, and psychiatric technicians are organic to the military units they support in the same way battalion surgeons, corpsmen, and chaplains are organic to their operational units in the Marine Corps. OSCAR mental health providers train with their Marines prior to deployment, they accompany their Marines into forward operational areas during deployment, and they continue to provide support to their Marines after they return from deployment. OSCAR builds a bridge across the cultural gap between warfighter and mental health professional the only way such a bridge can be built—by drawing the mental health professional as fully as possible into the culture and life of the military unit to be supported. As one commander of a Marine infantry battalion said to his newly assigned OSCAR psychiatrist, “I am never going to live in your world, so it’s a good thing that you are here to learn about mine.” Although embedded at the level of the Marine regiment (or air wing or logistics group), the OSCAR team ideally does not remain at the level of the regiment. OSCAR psychiatrists and psychologists are not primarily clinicians, so they do not wait in clinics for patients to walk through their doors. OSCAR mental health providers, corpsmen, and Marine non-commissioned

officers are required to spend as much time as possible with the battalions and companies in their regiment, as far forward as is feasible. Prevention, early identification, and effective treatment at the lowest level possible are the goals of the OSCAR program.

Since the goal of the Marine Corps OSCAR program is to place scientific tools for the prevention, early identification, and effective treatment of adverse stress reactions in the hands of Marines and Marine leaders, the best evidence for the program's effectiveness would be data documenting increased use of such tools by Marines. The Marine Corps and its partner in the OSCAR program, the U.S. Navy, are currently developing measures to collect data on the effectiveness of the OSCAR program.

Even at this early stage in the implementation of the OSCAR program, however, one measure of the effectiveness of the program is the extent to which Marines have embraced the concept of embedding mental health professionals in Marine units. All three Marine Expeditionary Forces have become enthusiastic about OSCAR, and Marine air wings and logistics groups have requested their own OSCAR teams. Furthermore, as of October, 2005, the Marine Corps now has an OSCAR psychiatrist "embedded" in its Manpower & Reserve Affairs department at Headquarters, Marine Corps, to coordinate combat/operational stress control efforts Marine Corps-wide. In the Marine Corps, combat/operational stress control programs fall under the direction of the Deputy Commandant for Manpower & Reserve Affairs, not the Marine Corps' medical support agency, the Navy Bureau of Medicine and Surgery.

Appendix F

National Intrepid Center of Excellence Background ⁴¹

The National Intrepid Center of Excellence (NICoE) is a facility dedicated to advancing the clinical care, diagnosis, research, and education of service members and families experiencing combat related traumatic brain injury (TBI) and psychological health (PH) conditions. The Intrepid Fallen Heroes Fund (IFHF) led the fundraising effort for the Center, securing \$65 million in private donations from the American people and overseeing the construction and equipping of the facility. The 72,000 square foot, two-story facility located on the Navy campus in Bethesda, Maryland, was officially transferred to the Department of Defense in a dedication ceremony on June 24, 2010. The NICoE was later transferred from TRICARE Management Activity's Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) to the Department of the Navy for further alignment under the National Naval Medical Center, effective August 10, 2010.

The NICoE provides interdisciplinary diagnostic evaluations of complex TBI as well as PH conditions. Subsequent treatment plans are developed in a family-focused, collaborative environment while promoting physical, psychological and spiritual healing. In addition to advanced diagnostics and treatment planning, the NICoE also focuses on family education and reintegration support. Additional key principles include serving as a research hub utilizing the most current technical and clinical resources to initiate innovative pilot studies designed to advance medical science in TBI and PH as well as its commitment to long-term follow-up and family contact.

The NICoE is led by a skilled interdisciplinary team that strives to harness the latest advances in science, therapy, telehealth, education, research and technology while providing

compassionate, family-centered care for service members and their loved ones throughout the recovery process.

The primary patient population of the NICoE is active duty service members with TBI and PH conditions who are not responding to conventional therapy. After being referred by their provider, patients will come to the NICoE with their families for two-three weeks, where they will stay in a NICoE dedicated Fisher House on the Bethesda campus. Service members return to their duty station as well as referring military treatment facility upon the completion of their time at NICoE with a personalized treatment plan. While the NICoE will follow-up with all patients and providers once the patient returns home, the ultimate goal is to help those eligible service members overcome their challenges with military duty requirements.

The NICoE features cutting-edge technology, such as the CAREN (Computer Assisted Rehabilitation Environment), one of only eight such machines in the world which features a motion platform, embedded treadmill, and virtual environments for evaluating and rehabilitating a patient's vision, reaction time, gait and multitasking ability. Additionally, the NICoE utilizes some of the most advanced imaging technologies in the world, including a Positron Emission Tomography-Computed Tomography (PET-CT), Magnetic Resonance Imaging (MRI), and Magnetoencephalography (MEG), enabling providers to view brain scans and images in multiple dimensions.

Appendix G

Wounded Warrior Care Points of Contact

CDC's National Center for Injury Prevention and Control: www.cdc.gov/ncipc/tbi/TBI.htm

-Covers a variety of brain injury related topics and treatment modalities

National Institute of Neurological Disorders and Stroke (NINDS) Traumatic Brain Injury Information Page: www.ninds.nih.gov/disorders/tbi/tbi.htm

--Covers a variety of brain injury related topics and treatment modalities

Traumatic Brain Injury National Resource Center: www.nrc.pmr.vcu.edu
Brainline (DVBIC-sponsored): www.brainline.org

-Provides general information and resources for brain injury treatment

Brain Injury Association of America: <http://www.biausa.org/>

-Provides general information and resources for brain injury treatment

USMC Wounded Warrior Regiment: <http://www.woundedwarriorregiment.org/>

-Provides information on identification, treatment, and resources available to commanders, includes a 24-hour help line for all veterans and commanders

Defense Centers of Excellence: <http://www.dcoe.health.mil/>

-The premier DoD website for information regarding TBI and PTSD

National Intrepid Center of Excellence: <http://www.nicoe.capmed.mil/SitePages/Home.aspx>

-Referral information for wounded veterans, specializes in comprehensive treatment plans for TBI

Semper Max Support Fund: <http://www.sempermax.com/>

-Sponsored by a retired wounded Marine who is active in the education and mentorship of TBI and PTSD survivors and their families

Veterans Affairs- Understanding TBI: <http://www.polytrauma.va.gov/understanding-tbi/>

-VA information for national resources available- includes TBI, PTSD, and VA benefit information.

References

- ¹ Carl von Clausewitz, *On War*, ed. Michael Howard and Peter Paret, trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 113.
- ² Merriam-Webster Dictionary, Definition of Knowledge, <http://www.merriam-webster.com/dictionary/knowledge> , accessed on 11 April 2013.
- ³ Barbara Mannino, Growing Threat to Soldiers: Traumatic Brain Injury. Fox Business News, March 2011, <http://www.foxbusiness.com/personal-finance/2011/03/09/growing-threat-soldiers-traumatic-brain-injury/>.
- ⁴ National Intrepid Center of Excellence, *2010 TBI Symposium*, Washington, D. C. , May 2010.
- ⁵ Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control. *Report to Congress on mild traumatic brain injury in the United States: steps to prevent a serious public health problem*. Atlanta (GA): Centers for Disease Control and Prevention; 2003.
- ⁶ Interviews with patients who have undergone treatment for PTSD and TBI at the National Intrepid Center of Excellence, January 2013.
- ⁷ National Intrepid Center of Excellence, *2010 TBI Symposium*, Washington, D. C. , May 2010.
- ⁸ Interviews with patients who have undergone treatment for PTSD and TBI at the National Intrepid Center of Excellence, January 2013.
- ⁹ Interviews with patients who have undergone treatment for PTSD and TBI at the National Intrepid Center of Excellence, January 2013.
- ¹⁰ American Psychiatric Association. 2000. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. Washington, DC: American Psychiatric Association.
- ¹¹ Okie, S. (2005). "Traumatic Brain Injury in the War Zone." New England Journal of Medicine 352(20): 2043-2047.
- ¹² Diane Swick, Ph.D. , *The Separate and Cumulative Effects of TBI and PTSD on Cognitive Function and Emotional Control*, U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland.
- ¹³ Interviews with patients who have undergone treatment for PTSD and TBI at the National Intrepid Center of Excellence, January 2013.
- ¹⁴ Robert Koffman, Capt, USN, *NICOE Brief to the Recovering Warrior Task Force*, 14 January 2013.

¹⁵ *Ibid.*

¹⁶ A. J. MacGregor Ph.D. MPH, *Prevalence and Psychological Correlates of Traumatic Brain Injury in Operation Iraqi Freedom*, Report No. 07-33 Naval Health Research Center.

¹⁷ National Intrepid Center of Excellence, *2010 TBI Symposium*, Washington, D. C. , May 2010.

¹⁸ Robert Koffman, Capt, USN, *NICOE Brief to the Recovering Warrior Task Force*, 14 January 2013.

¹⁹ U.S. Navy Manual of the Medical Department, Chapter 19, Physical Evaluation Boards, Washington D.C. .

²⁰ National Center for PTSD, *Report of (VA) Consensus Conference: Practice Recommendations for Treatment of Veterans with Comorbid TBI, Pain, and PTSD*, Department of Defense publication.

²¹ The Commandant of the Marine Corps on Post Traumatic Stress and Traumatic Brain Injury, *Leatherneck Magazine*, October 2011, 18.

²² *Ibid.*

²³ ALMAR 01/13, *Revision of the Commandant's Reading List, HQ USMC*, <http://www.marines.mil/News/Messages/MessagesDisplay/tabid/13286/Article/136236/revision-of-the-commandants-professional-reading-list.aspx>.

²⁴ Merriam-Webster Dictionary, Definition of Understanding, <http://www.merriam-webster.com/dictionary/knowledge> , accessed on 11 April 2013.

²⁵ National Center for PTSD, *Report of (VA) Consensus Conference: Practice Recommendations for Treatment of Veterans with Comorbid TBI, Pain, and PTSD*, Department of Defense publication

²⁶ Capt William Nash, USN *Operational Stress Control and Readiness (OSCAR): The United States Marine Corps Initiative to Deliver Mental Health Services to Operating Forces*, 1 April 2006, Department of Defense.

²⁷ Kyle Possemato, Ph.D., *The Current State of Intervention Research for Posttraumatic Stress Disorder Within the Primary Care Setting*, *Journal of Clinical Psychology Med Settings*. 2011 Sep; 18 (3): 268-80, Date Accessed: 2013/01/22. www.lexisnexis.com/hottopics/lnacademic.

²⁸ National Center for PTSD, *Report of (VA) Consensus Conference: Practice Recommendations for Treatment of Veterans with Comorbid TBI, Pain, and PTSD*, Department of Defense publication.

²⁹ Department of Defense Suicide Event Report, 2011 DoD SER Report, Department of Defense.

³⁰ National Center for PTSD, *Report of (VA) Consensus Conference: Practice Recommendations for Treatment of Veterans with Comorbid TBI, Pain, and PTSD*, Department of Defense publication.

³¹ Defense Centers of Excellence, *Traumatic Brain Injury Pocket Guide*, Department of Defense, <http://www.dcoe.health.mil/Content/Navigation/Documents/Mild%20Traumatic%20Brain%20Injury%20Pocket%20Guide.pdf>.

³² The Commandant of the Marine Corps on Post Traumatic Stress and Traumatic Brain Injury, *Leatherneck Magazine*, October 2011, 18.

³³ Robert Koffman, Capt, USN, *NICOE Brief to the Recovering Warrior Task Force*, 14 January 2013.

³⁴ *Invisible Trauma Effects Are No Less Real*, Quantico Sentry, 7 November, 2011.

³⁵ ALMAR 01/13, *Revision of the Commandant's Reading List*, HQ USMC, <http://www.marines.mil/News/Messages/MessagesDisplay/tabid/13286/Article/136236/revision-of-the-commandants-professional-reading-list.aspx>.

³⁶ Robert Koffman, Capt, USN, *NICOE Brief to the Recovering Warrior Task Force*, 14 January 2013.

³⁷ Defense Centers of Excellence, *Traumatic Brain Injury Pocket Guide*, Department of Defense, <http://www.dcoe.health.mil/Content/Navigation/Documents/Mild%20Traumatic%20Brain%20Injury%20Pocket%20Guide.pdf>.

³⁸ Defense Centers of Excellence, *Traumatic Brain Injury Pocket Guide*, Department of Defense, <http://www.dcoe.health.mil/Content/Navigation/Documents/Mild%20Traumatic%20Brain%20Injury%20Pocket%20Guide.pdf>.

³⁹ USMC Wounded Warrior Regiment: *Mission Statement and General Information* <http://www.woundedwarriorregiment.org/>.

⁴⁰ Capt William Nash, USN *Operational Stress Control and Readiness (OSCAR): The United States Marine Corps Initiative to Deliver Mental Health Services to Operating Forces*, 1 April 2006, Department of Defense.

⁴¹ National Intrepid Center of Excellence: *General Information*, <http://www.nicoe.capmed.mil/SitePages/Home.aspx>.